

## CLAIMS

What is claimed is:

- 1           1.     A method for accurately determining a device location in an arbitrated  
2 loop having a plurality of devices and at least one initiator, wherein each of said  
3 plurality of devices having a port bypass circuit, comprising:  
4           (a) enabling said port bypass circuits and initializing said arbitrated loop to  
5 determine said initiator's enhanced logical address;  
6           (b) disabling a port bypass circuit associated with a selected device and  
7 determining a unique identifier and a physical slot location of said selected device;  
8           (c) saving said unique identifier and said physical slot location of said selected  
9 device and enabling said port bypass circuit associated with said selected device;  
10          (d) repeating (b) through (c) for each of said plurality of devices;  
11          (e) disabling said port bypass circuits and performing a loop initialization of  
12 said arbitrated loop to determine a unique identifier for each of said plurality of  
13 devices; and  
14          (f) mapping said unique identifiers determined in (e) with said unique  
15 identifiers associated with physical slot locations in (c) wherein said physical slot  
16 location of each of said plurality of devices is accurately determined.

- 1           2.     The method as recited in Claim 1, further comprising determining a set  
2 of valid physical addresses for said plurality of devices.

- 1           3.     The method as recited in Claim 2, further including assigning a  
2 preferred enhanced logical address to said initiator that does not correspond to an  
3 address in said set of valid physical addresses.

1           4.     The method as recited in Claim 1, wherein said disabling a port bypass  
2 circuit associated with a selected device includes determining an enhanced logical  
3 address of said selected device.

1           5.     The method as recited in Claim 4, further comprising:  
2           comparing said enhanced logical address of said selected device with said  
3 physical slot location of said selected device; and  
4           reporting a fault condition in response to said enhanced logical address and  
5 said physical slot location of said selected device not being identical.

1           6.     The method as recited in Claim 4, further comprising:  
2           comparing said enhanced logical address of said selected device with said  
3 physical slot location of said selected device;  
4           responsive to said enhanced logical address and said physical slot location of  
5 said selected device not being identical, comparing said physical slot location of said  
6 selected device with said enhanced logical addresses of the remainder of said plurality  
7 of devices; and  
8           reporting a fault condition in response to said physical slot location of said  
9 selected device not equal to one of said enhanced logical address of the remainder of  
10 said plurality of devices.

1           7.     The method as recited in Claim 1, wherein said disabling said port  
2 bypass circuits and performing a loop initialization includes determining an enhanced  
3 logical address for each of said plurality of devices.

1           8.     The method as recited in Claim 1, wherein said arbitrated loop is a  
2 fibre channel arbitrated loop (FC-AL).

1           9.     The method as recited in Claim 1, wherein said unique identifier is a  
2 world wide unique address (WWID) of said device.

1           10.    The method as recited in Claim 1, wherein said saving said unique  
2 identifier and said physical slot location of said selected device includes utilizing a  
3 first table.

1           11.    The method as recited in Claim 10, wherein said disabling said port  
2 bypass circuits and performing a loop initialization includes constructing a second  
3 table to store said unique identifiers.

1           12.    The method as recited in Claim 11, wherein said mapping said unique  
2 identifiers includes matching a unique identifier in said second table with an identical  
3 unique identifier in said first table to obtain a physical slot location.

1           13.     A computer program product, comprising:  
2           a computer-readable medium having stored thereon computer executable  
3 instructions for implementing a method for accurately determining a device location  
4 in an arbitrated loop having a plurality of devices and at least one initiator, wherein  
5 each of said plurality of devices having a port bypass circuit, said computer  
6 executable instructions when executed perform the steps of:

7                   (a) enabling said port bypass circuits and initializing said arbitrated  
8 loop to determine said initiator's enhanced logical address;

9                   (b) disabling a port bypass circuit associated with a selected device and  
10 determining a unique identifier and a physical slot location of said selected  
11 device;

12                   (c) saving said unique identifier and said physical slot location of said  
13 selected device and enabling said port bypass circuit associated with said  
14 selected device;

15                   (d) repeating (b) through (c) for each of said plurality of devices;

16                   (e) disabling said port bypass circuits and performing a loop  
17 initialization of said arbitrated loop to determine a unique identifier for each of  
18 said plurality of devices; and

19                   (f) mapping said unique identifiers determined in (e) with said unique  
20 identifiers associated with physical slot locations in (c) wherein said physical  
21 slot location of each of said plurality of devices is accurately determined.

1           14.     The computer program product as recited in Claim 13, further  
2 comprising determining a set of valid physical addresses for said plurality of devices.

1           15.     The computer program product as recited in Claim 14, further  
2 including assigning a preferred enhanced logical address to said initiator that does not  
3 correspond to an address in said set of valid physical addresses.

1           16.     The computer program product as recited in Claim 13, wherein said  
2     disabling a port bypass circuit associated with a selected device includes determining  
3     an enhanced logical address of said selected device.

1           17.     The computer program product as recited in Claim 16, further  
2     comprising:

3                 comparing said enhanced logical address of said selected device with said  
4     physical slot location of said selected device; and

5                 reporting a fault condition in response to said enhanced logical address and  
6     said physical slot location of said selected device not being identical.

1           18.     The computer program product as recited in Claim 16, further  
2     comprising:

3                 comparing said enhanced logical address of said selected device with said  
4     physical slot location of said selected device;

5                 responsive to said enhanced logical address and said physical slot location of  
6     said selected device not being identical, comparing said physical slot location of said  
7     selected device with said enhanced logical addresses of the remainder of said plurality  
8     of devices; and

9                 reporting a fault condition in response to said physical slot location of said  
10    selected device not equal to one of said enhanced logical address of the remainder of  
11    said plurality of devices.

1           19.     The computer program product as recited in Claim 13, wherein said  
2     arbitrated loop is a fibre channel arbitrated loop (FC-AL).

1           20.     The computer program product as recited in Claim 13, wherein said  
2 unique identifier is a world wide unique address (WWID) of said device.

1           21.     The computer program product as recited in Claim 13, wherein said  
2 saving said unique identifier and said physical slot location of said selected device  
3 includes utilizing a first table.

1           22.     The computer program product as recited in Claim 21, wherein said  
2 disabling said port bypass circuits and performing a loop initialization includes  
3 constructing a second table to store said unique identifiers.

1           23.     The computer program product as recited in Claim 22, wherein said  
2 mapping said unique identifiers includes matching a unique identifier in said second  
3 table with an identical unique identifier in said first table to obtain a physical slot  
4 location.

1           24.     An arbitrated loop network system, comprising:  
2                 a plurality of devices, including at least one initiator device, coupled to said  
3 arbitrated loop;  
4                 a hub, coupled to said plurality of device, having a plurality of port bypass  
5 circuits, each of said plurality of port bypass circuits associated with one of said  
6 plurality of devices;  
7                 (a) means for enabling said port bypass circuits and initializing said arbitrated  
8 loop to determine said initiator's enhanced logical address;  
9                 (b) means for disabling a port bypass circuit associated with a selected device  
10 and determining a unique identifier and a physical slot location of said selected  
11 device;  
12                 (c) means for saving said unique identifier and said physical slot location of  
13 said selected device and enabling said port bypass circuit associated with said selected  
14 device;  
15                 (d) means for repeating (b) through (c) for each of said plurality of devices;  
16                 (e) means for disabling said port bypass circuits and performing a loop  
17 initialization of said arbitrated loop to determine a unique identifier for each of said  
18 plurality of devices; and  
19                 (f) means for mapping said unique identifiers determined in (e) with said  
20 unique identifiers associated with physical slot locations in (c) wherein said physical  
21 slot location of each of said plurality of devices is accurately determined.

1           25.     The system as recited in Claim 24, further comprising means for  
2 determining a set of valid physical addresses for said plurality of devices.

1           26.     The system as recited in Claim 25, further including means for  
2 assigning a preferred enhanced logical address to said initiator that does not  
3 correspond to an address in said set of valid physical addresses.

1           27.    The system as recited in Claim 24, wherein said disabling a port  
2           bypass circuit associated with a selected device includes determining an enhanced  
3           logical address of said selected device.

1           28.    The system as recited in Claim 27, further comprising:  
2           comparing said enhanced logical address of said selected device with said  
3           physical slot location of said selected device; and  
4           reporting a fault condition in response to said enhanced logical address and  
5           said physical slot location of said selected device not being identical.

1           29.    The system as recited in Claim 27, further comprising:  
2           comparing said enhanced logical address of said selected device with said  
3           physical slot location of said selected device;  
4           responsive to said enhanced logical address and said physical slot location of  
5           said selected device not being identical, comparing said physical slot location of said  
6           selected device with said enhanced logical addresses of the remainder of said plurality  
7           of devices; and  
8           reporting a fault condition in response to said physical slot location of said  
9           selected device not equal to one of said enhanced logical address of the remainder of  
10          said plurality of devices.

1           30.    The system as recited in Claim 24, wherein said arbitrated loop is a  
2           fibre channel arbitrated loop (FC-AL).

1           31.    The system as recited in Claim 24, wherein said unique identifier is a  
2           world wide unique address (WWID) of said device.



1           32.    The system as recited in Claim 24, wherein said means for saving said  
2           unique identifier and said physical slot location of said selected device includes  
3           means for utilizing a first table.

1           33.    The system as recited in Claim 32, wherein said means for disabling  
2           said port bypass circuits and performing a loop initialization includes means for  
3           constructing a second table to store said unique identifiers.

1           34.    The system as recited in Claim 33, wherein said means for mapping  
2           said unique identifiers includes means for matching a unique identifier in said second  
3           table with an identical unique identifier in said first table to obtain a physical slot  
4           location.

to be entered